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BEXP, EINV, TBIO, AMED, PGOV, IN
SUBJECT: PLASTIC BAGS - A GROWING ENVIRONMENTAL AND HEALTH CONCERN
IN INDIA

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1. (U) Summary. The ubiquitous plastic bag, the common man's source of inexpensive and hygienic storage in India, is increasingly becoming a cause of grave concern to the environment and the health of both human beings and animals. The Government of India (GOI) and the state governments are realizing the problem and have legislated many laws to regulate, curtail or ban their use. Unfortunately, they have been quite lax in implementing them. International experience also shows that ban on plastic bags is not a very effective solution. Indian per capita consumption of flexible plastic packaging at 4kgs per year may be low but the country generates about 10,000 Metric tons of flexible plastic packaging waste per day. The flexible plastic packaging industry is big business in India and is expected to nearly triple in the next 7 years from its present turnover of USD 2.5 billion. Looking at the type of plastic waste generated in India, 80 percent of it could be recycled and 20 percent burnt. Indian efforts in the mitigation of the problem are still in the early stages. One of the interesting solutions being developed is 100 percent conversion of plastic waste into fuel of which about 70 percent would be liquid fuel. With India beginning to invest in Municipal Solid Waste (MSW) technologies and planning to segregate plastic waste, there are opportunities for both US government and the private companies to offer existing best practices and technological solutions to address this problem. End Summary.

Unforeseen Problems due to Improper Disposal of Plastic Bags

12. (U) The ubiquitous plastic bags and flexible plastic packaging material in general, a convenience for the Indian consumer, has now become a major cause of concern. It would be impossible for any one to miss the sight of the plastic bags strewn all over in India, a visual blight in every city, town and village. According to the Central Pollution Control Board (CPCB) of India under the Ministry of Environment and Forest (MoEF), India generates approximately 10,000 Metric tons per day of plastics waste which is rapidly growing by the day. The plastics waste constitutes about 9 percent of the nearly 120,000 Metric tons of MSW generated per day in India.

This is only expected to grow with increasing population, developmental activities, changes in life style and socio-economic conditions. The improper disposal of these plastic bags have already led to a wide range of problems including chocking drains, stagnant water leading to infections, poisoning and killing of cows and pets as they consume the plastic bags and the food left in them, and pollution of the environment due to burning of plastic waste. One example was the 2005 monsoon flooding in the city of Mumbai which led to over 1000 people losing their lives. The city government blamed the plastic bags which clogged the drains as one of the reasons for the floods. Another example is the recent National Public Radio, US report about the death of between 15,000 and 20,000 cows each month in India due to the inhibition of normal digestion in their stomachs on account of swallowing plastic bags.

13. (U) The extent of the problem can be gauged from the fact that on August 7, 2008, the Delhi High Court directed the Delhi Government to extend the ban on plastics to all markets in the city, in addition to the earlier ban in areas like hotels and shopping malls. The high court was ruling on a 4 year old Public Interest Litigation (PIL) by a NGO called 'Tapas' based in Delhi on "Implementation of Ban of Plastic Bags and Reduction of Garbage". During the course of the hearing the court had also constituted a

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three member committee under the chairmanship of a Justice and members from the CPCB and the Delhi Pollution Control Board (DPCB) to formulate the guidelines for plastic bag manufacturing and disposal. The report is expected to be available in the public domain along with the Court judgment by mid September, 2008. However the Court has not imposed any deadline for the implementation of the ban. In response to the court order the Delhi government is planning to mandate that plastic bags used should be disposable by burning, at least 40 microns thick and 8 x 12 inches in size. As per newspaper reports they also plan to launch a poster campaign for reduction in use of plastic bags.

----- Legislation to Overcome the Problem not Effective -----

14. (U) The GOI and the various state governments have been trying to fight the menace of plastic bags for over a decade. Himachal Pradesh state government was the first to pass a law in July 1996 'The Non-Biodegradable Waste Act' to address the plastics problem. The Act, which banned the "haphazard discarding" or non-biodegradable waste, was never properly enforced. Further legislation taxed the local production of plastics, but manufacturing simply moved to other States. The issue gained momentum and in 2000 the GOI decreed that all plastic bags in the country must be thicker than 20 microns as these bags are more likely to be picked by "ragpickers" and avoided by animals. The GOI and most states including Andhra Pradesh, Himachal Pradesh, Goa, Kerala, Maharashtra, Jammu & Kashmir, Rajasthan and Tamil Nadu have enacted over 15 legislations and notifications regulating the manufacture of plastic bags, the disposal of non-biodegradable plastics and the use of biodegradable plastics. The limit of the thickness of the plastic bags varies from 20 micron to 75 micron in different states. However the states and the GOI have not been able to implement the rules effectively.

----- Factors Hindering Implementation of Regulations -----

15. (U) Plastic bags come in all sizes and shape. According to the Indian Centre for Plastics in the Environment (ICPE), an autonomous

trade body jointly run by representatives from public and private agencies, plastic bags are very convenient to use, easy to store, occupy less space, weigh less, consume less material, energy and water during manufacture as compared to paper and jute which are expensive. They also save on transportation cost due to low volume and weight. For food items such as milk, edible oil, groceries and cosmetics like soap and shampoo, plastic pouches are extremely attractive. They lead to protection from adulteration, pilferage and moisture and a longer shelf life for the product. A whole ecosystem of production, storage and transportation industries has been developed using plastic bags and pouches and any steps for changing the same would be very difficult, expensive and may not even be viable in some cases. The Indian consumer having been used to the plastic bags and its associated advantages, has now completely forgotten the traditional practice of carrying a cloth or a jute bag for shopping. People demand a plastic carry bag for the smallest of items purchased. Hence, even though there is an official ban, many shopkeepers for fear of losing their customers continue to keep plastic bags.

----- Plastics is Big Business -----

¶6. (U) Plastics is big business, according to ICPE. Indian flexible packaging industry (of which the plastic bags are a key component)

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generates about 1,070,000 Metric tons of plastic bag material with a revenue of nearly USD 2.5 billion per year. The volume and the revenue are expected to triple to about 3,109,000 Metric tons and USD 7.25 billion respectively in the next 7 years, at an annual growth rate of 16.5 percent. There are about 5000 big and small enterprises involved in the plastic bag industry, with more than half of them in the unorganized sector. They work in diverse areas including plastic film production, bag making and recycling. Delhi alone has about 2000 companies. India has one of the lowest annual per capita consumption of plastics at 4 Kgs as against a per capita consumption of 18 Kgs for China and an international average of 20 Kgs for most developed countries. Indians also reuse most of the plastic bags (60 percent); yet the consumption is expected to increase with the growth of super markets, malls and the food processing industry. In the 10 years between 1996 (61,000 tons) to 2006 (7,500,000 tons), plastics usage has grown over 120 times. Thus a ban on plastics as demanded by many NGOs may never happen. The ban on usage with no restriction on manufacturing would be of no use. Further a complete ban on manufacturing and usage of plastic bags would not be feasible as many Indian companies have a booming business of export of plastic bags to leading shopping chains in Europe and USA. This would become illegal if India bans plastic bags completely for local use as it is a signatory to Basel Convention and cannot export something that it does not use within its borders.

----- International Experience Varies Widely -----

¶7. (U) Worldwide, only few countries have a ban on plastic bags. The developed countries on account of their better MSW disposal system have managed to curtail the plastic waste problem in spite of generating more waste. Cities in USA like San Francisco and Portland and several in Europe have now initiated ban on plastic bags. So have Australia and Ireland. China and South Africa like India have a ban on thinner bags. Only Rwanda and Eritrea in Africa have a complete ban, while more African countries are trying to have thickness limits imposed on them. Some of the African countries have had some success in reduction of the plastic bag usage by adding a tax or surcharge.

----- Classification of Indian Plastic Waste and its Disposal -----

¶8. (U) Plastics waste in India broadly falls into two categories: 'Thermoplastics' and 'Thermosets'. Thermoplastics constitute 80 percent of the waste and are recyclable. This includes Polyethylene Terephthalate (PET), Low Density Poly Ethylene (LDPE), Poly Vinyl Chloride (PVC), High Density Poly Ethylene (HDPE), Polypropylene

(PP) and Polystyrene (PS). Thermosets which constitute the remaining 20% are not recyclable. Thermosets contain many components including alkyd, epoxy, ester, melamine formaldehyde, phenolic formaldehyde, silicon, urea formaldehyde, polyurethane, metallized and multilayer plastics. These plastics when burnt in the atmosphere could lead to environment pollution and release of toxic gases. Thermosets are used for making small pouches of 'pan masala' (a flavored chewable mixture made with tobacco and betel nut as ingredients), shampoo, biscuits and chocolates. 'Pan masala' pouches are the key source of revenue for over 50 percent of unorganized plastic pouch makers and a major source of contaminating plastic waste. These bags due to their small size and because they cannot be recycled are of no value to the "rag pickers".

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¶9. (U) Currently, only few cities have MSW segregation policies and practices. In some pockets of Bangalore, Mumbai and Ahmedabad there is segregation of plastics, other solid waste and biodegradable waste. As mentioned earlier any segregation of MSW and plastics is done by the "rag pickers", who make anything between 45 to 60 cents per Kg of recyclable plastic waste. The recycling is mostly done by the unorganized companies who may not have access to best practices and may employ environmentally harmful means for recycling. This will lead to release of toxic fumes while burning the waste or discharge of chemicals like hydrochloric acid and other carcinogenic compounds and heavy metals during leaching or recycling. GOI and the states besides legislations have also started charging plastics manufacturers for the cost of recycling. However with no proper recycling facility and most of the manufactures being in the unorganized sector, this too has not been successful. The states which have nearly 80 percent of India's plastics manufacturing and recycling units are Andhra Pradesh, Delhi, Gujarat, Karnataka, Maharashtra, Madhya Pradesh and Tamilnadu.

----- Technologies for Plastic Recycle and Disposal -----

¶10. (U) In order to establish the best practices for plastic waste management, CPCB has initiated various projects with support from other GOI agencies including the Department of Science and Technology (DST), MoEF and Ministry of Petroleum and Natural Gas. These include:

- * Use of waste plastic along with bitumen for relaying roads
- * Development of environment friendly Plasma Pyrolysis process for plastics waste disposal
- * Study of biodegradability and compostability of all plastics and create a database
- * Support and verification of technologies which converts 100 percent of plastic waste directly into fuel of which about 70 percent would be liquid fuel, 20 percent gas and the rest coke.

¶11. (U) Many companies around the world have been trying to generate fuel from plastic waste, but in most cases the catalysts used in the process leave residues which makes the fuel unusable. Two technologies in India which have attracted international attention are being developed by Unique Waste Plastic Management & Research Company (UWPMR), Nagpur and Sustainable Technologies and Environmental Projects Ltd (STEPS), Mumbai. Dr. Umesh of UWPMR told SciFSN that their technology is one of the most inexpensive and clean technologies for managing all types of plastic waste with no need for any pre-treatment or sorting. He also said that many Indian companies including Reliance, Hindustan Petroleum and international companies like Applied Science Inc in the US and Izemitsu in Japan have shown interest in the technology. This technology has been licensed to Asian Electronics, a Pune based energy efficient lighting company. The STEPS technology has been awarded the gold medal under the Lockheed Martin India Innovation growth program, funded by Lockheed Martin and run by the Federation of the Indian Chamber of Commerce and Industry (FICCI) and Innovation, Creativity & Capital (IC2) Institute, University of Texas in 2007. Both companies have 25 Metric tons per day capacity facility to convert plastic waste into fuel.

¶12. (U) The CPCB had helped validate the above mentioned technologies at the national labs. Dr. Akolkar, Additional Director

of CPCB told SciFSN that they continue to work on all the above plastics waste management technologies and would like to build capacity to manage the plastic waste. He said that CPCB efforts are still focused towards the regulation of manufacturing and recycling

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of plastic waste and establishing good waste disposal technologies. CPCB is not in a position to do much about segregation and collection of plastic waste. Further this comes under the municipal activity and most of them are still not geared to segregate and collect the waste. He further added that they would very much like to learn more about plastic waste management processes, technologies and biodegradable plastics from US agencies and companies and would like to interact with the US Environment Protection Agency.

Comments

¶13. (U) Plastic bags and their proliferation is a menace that is recognized by the GOI and the states, hence a slew of legislations for their manufacture and use in the last decade. However, there has been no effective implementation of the various legislations. The whole country is literally at the mercy of the "rag pickers" and the unorganized sector, with the state machinery unable to deal with the problem. India is also becoming a dumping ground for plastic waste and e-waste from other countries. There is an urgent need to educate the people (both the consumer and the shop owner or the source) about reducing the use of plastic bags and if used, to dispose it properly. Unfortunately in many places even if one were interested in disposing the bags carefully, there is no provision of garbage bins. Some cities have taken the first steps by outsourcing MSW collection. Even if the waste was segregated, the cities and town do not have the proper technology to treat or recycle the waste in an environment-friendly manner. Most developmental work in this direction is still a work in progress and cannot address the immediate issues. The DST, MoEF and CPCB, the agencies responsible for finding solutions to this problem are looking for help and support. Hence it is an opportunity for both the US agencies and companies to offer existing best practices and environment-friendly technological solutions to mitigate this problem. The opportunities are across the whole spectrum, from waste collection and segregation, recycling technologies and practices, disposal technologies, biodegradable plastics and even waste based energy generation. End Comment.

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